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Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

10 CFR 50.73

**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/2020-001-01
UNIT 2 LICENSE NO. NPF-22
PLA-7887**

Docket No. 50-388

Attached is Licensee Event Report (LER) 50-388/2020-001-01. The LER supplement reports an event involving a manual scram due to rising main condenser backpressure. The condition is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System (including a reactor scram).

There were no actual consequences to the health and safety of the public as a result of this event.


This letter contains no new or revised regulatory commitments.

A handwritten signature in black ink, appearing to read "K. Cimorelli", written over a horizontal line.

K. Cimorelli

Attachment: LER 50-388/2020-001-01

Copy: NRC Region I
Mr. C. Highley, NRC Sr. Resident Inspector
Ms. S. Goetz, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

NRC FORM 366 (08-2020)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104		EXPIRES: 08/31/2023			
 LICENSEE EVENT REPORT (LER) (See Page 3 for required number of digits/characters for each block) (See NUREG-1022, R.3 for instruction and guidance for completing this form https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)					Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to infocollects.Resource@nrc.gov , and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk all: ofra_submission@omb.eop.gov . The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.					
1. Facility Name Susquehanna Steam Electric Station Unit 2					2. Docket Number 05000388		3. Page 1 of 4			
4. Title Manual Scram Due to Rising Main Condenser Backpressure Caused by Failure of an Offgas Recombiner Inlet Valve										
5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
02	14	2020	2020	- 001 -	01	11	05	2020	Facility Name	Docket Number
										05000
										05000
9. Operating Mode					10. Power Level					
1					098					
11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)										
10 CFR Part 20		<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.36(c)(2)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)		
<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		10 CFR Part 73		
<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.69(g)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(4)		
<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.71(a)(5)		
<input type="checkbox"/> 20.2203(a)(2)(i)		10 CFR Part 21		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(1)(i)		
<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 21.2(c)		<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(i)		
<input type="checkbox"/> 20.2203(a)(2)(iii)		10 CFR Part 50		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)		<input type="checkbox"/> 73.77(a)(2)(ii)		
<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)				
<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
<input type="checkbox"/> Other (Specify here, in Abstract, or in NRC 366A).										
12. Licensee Contact for this LER										
Licensee Contact C. E. Manges, Jr, Senior Engineer – Nuclear Regulatory Affairs								Phone Number (Include Area Code) 570-542-3089		
13. Complete One Line for each Component Failure Described in this Report										
Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS	
X	WF	FCV	V037	Y						
14. Supplemental Report Expected					15. Expected Submission Date			Month	Day	Year
<input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)								
16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines) On February 14, 2020 at 00:25, Susquehanna Steam Electric Station (SSES) Unit 2 reactor was manually scrambled due to rising Main Condenser backpressure caused by a loss of the Unit 2 Offgas Recombiner. This event was reported by Notification EN 54525 in accordance with 10 CFR 50.72(b)(2)(iv)(B) and (b)(3)(iv)(A). This event is also reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System (RPS) (including reactor scram), as well as associated isolation and actuation of other systems listed in 10 CFR 50.73(a)(2)(iv)(B), including the Reactor Core Isolation Cooling (RCIC) system. The most probable cause was an inadvertent closure (drifting closed) of the Unit 2 Offgas Recombiner System Inlet Control Valve. Stroking, disassembly, reassembly, and air operated valve diagnostics alleviated the cause of the inadvertent closure. There were no actual safety consequences associated with the condition.										

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Susquehanna Steam Electric Station Unit 2	05000-388	YEAR 2020	SEQUENTIAL NUMBER - 001 -	REV NO. 01

NARRATIVE**CONDITIONS PRIOR TO EVENT**

Unit 1 – Mode 1, approximately 86 percent Rated Thermal Power

Unit 2 – Mode 1, approximately 98 percent Rated Thermal Power

Loss of the Unit 2 Offgas Recombiner caused rising Main Condenser backpressure, which resulted in the need for a manual scram.

EVENT DESCRIPTION

On February 14, 2020 at 00:25, Susquehanna Steam Electric Station Unit 2 reactor was manually scrammed due to rising Main Condenser [EIS System Code/Component Code: SG/COND] backpressure caused by a loss of the Unit 2 Offgas Recombiner [EIS System/Component Code: WF/RCB]. Following is a timeline of the events associated with the scram:

February 14, 2020 at approximately 00:12 - Unit 2 Offgas Recombiner 0C145 Panel Trouble and 2C198 Hydrogen Water Chemistry Panel Trouble alarms were received along with indication of rising Main Condenser backpressure. Initial Main Condenser backpressure was 2.6 inches HgA (Mercury Absolute) and was rising at approximately 0.3 inches HgA/minute.

February 14, 2020 at approximately 00:15 - A Recirculation Limiter 2 runback was inserted to lower reactor power. Main Condenser backpressure continued to rise following the reduction in reactor power.

February 14, 2020 at approximately 00:25 - A manual scram was inserted by placing the Reactor Mode Switch to Shutdown when Main Condenser backpressure rose to 6 inches HgA. All control rods inserted. Reactor water level lowered to -30 inches causing a Level 3 (+13 inches) isolation and a partial (Division 2) Level 2 (-38 inches) isolation. The Reactor Core Isolation Cooling (RCIC) system [EIS System Code: BN] actuated as expected for given plant conditions. Operators subsequently maintained reactor water level at the normal operating band using the Reactor Feed Water system [EIS System Code: SJ]. No steam relief valves [EIS System/Component Code: SB/RV] opened. The Reactor Recirculation Pumps [EIS System Code/Component Code: AD/P] remained in service.

This event was reported by Notification EN 54525 in accordance with 10 CFR 50.72(b)(2)(iv)(B) and (b)(3)(iv)(A). This event is also reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System (RPS) (including reactor scram), as well as associated isolation and actuation of other systems listed in 10 CFR 50.73(a)(2)(iv)(B), including RCIC.

CAUSE OF EVENT

The most probable cause was an inadvertent closure (drifting closed) of the Unit 2 Offgas Recombiner System Inlet Control Valve (HV26912) [EIS System/Component: WF/FCV]. Indications, system responses, and troubleshooting narrowed the failure to HV26912 inadvertently drifting closed, resulting in increased Main Condenser backpressure and the stalling of the Steam Jet Air Ejector [EIS System/Component Code: SH/EJR].

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		YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station Unit 2	05000-388	2020	- 001 -	01

NARRATIVE

Contributing to this event were a degraded antenna cable connector that resulted in poor radio communication and lack of clear procedural direction to place the standby offgas recombiner in service for the condition that existed. These contributors resulted in delay in placing the standby offgas recombiner in service.

ANALYSIS/SAFETY SIGNIFICANCE

The actual consequences from the loss of the Unit 2 Offgas and Condenser Air Removal Systems were rising main condenser backpressure, a forced down power, and subsequent manual scram.

The potential consequences included the following:

- Without prompt operator action, an automatic scram would have initiated, potentially with complications.
- Had the Common Offgas Recombiner not been available, the scram would have been complicated by the continued loss of condenser vacuum until the Mechanical Vacuum Pump [EIS System/Component Code: SH/P] was placed in service, and steam would have been directed to the Suppression Pool.

Based on the results of a risk significance evaluation, the event was classified as "very low" safety significance. During the event, very few risk significant components were out of service. The manual scram was uncomplicated, did not require Emergency Core Cooling System (ECCS) initiation, and Main Steam Isolation Valves (MSIVs) remained open (i.e., the main condenser remained available as the primary heat sink).

The condition described herein did not result in a safety system functional failure. Accordingly, this event will not be counted as a safety system functional failure in the Reactor Oversight Process Performance Indicators. There were no actual consequences to the health and safety of the public as a result of this event.

CORRECTIVE ACTIONS

Key corrective actions include:

1. HV26912 stroking, disassembly, reassembly, and air operated valve diagnostics alleviated the cause of the inadvertent closure.
2. The degraded antenna cable connector was repaired and signal strength checks were added to the annual radio health check preventive maintenance.
3. Established a tracking system to ensure Operations hand held radios are periodically maintained, including re-tuning.
4. Off normal vacuum procedures were revised to include abnormal offgas recombiner operation with rapidly degrading vacuum.
5. Replacement and testing of SV26912 during the next system outage window is planned and Susquehanna will revise the cause analysis if conflicting information is found.

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1. FACILITY NAME

Susquehanna Steam Electric Station Unit 2

2. DOCKET NUMBER

05000-388

3. LER NUMBER

YEAR

2020

SEQUENTIAL

NUMBER

- 001 -

REV

NO.

01

NARRATIVE**COMPONENT FAILURE INFORMATION**

Component failure information is as follows:

Manufacturer: Valtek, Inc.

Model No.: Mark I

Valve Function: Flow Control Valve

Valve Type: Globe

Size: 10 inches

Actuator Type: Air-Operated

PREVIOUS OCCURRENCES

LER 50-388/2015-003, "Unit 2 Automatic Reactor Scram Caused by Main Turbine Trip Due to Loss of Main Condenser Vacuum," dated June 8, 2015